

What is claimed is:

1. A method for detecting a target sound, comprising:
 - inputting detection target sounds outputted from a detection target sound source into plural microphones;
 - detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;
 - detecting an inclination of the phase of the cross-spectrum with respect to the frequency due to respective distances from the detection target sound source to the plural microphones; and
 - based on the inclination, detecting the target sound received by the plural microphones.
2. The method for detecting a target sound as claimed in Claim 1, comprising:
 - dividing the frequency according to the band; and
 - based on inclinations of the phase of each band divided, detecting the target sound.
3. The method for detecting a target sound as claimed in Claim 2, comprising:
 - detecting the target sound when a tendency that the inclinations of each band concentrate on a specific inclination is strong.
4. The method for detecting a target sound as claimed in any one of Claims 1 through 3, comprising:
 - dividing the sound signals inputted into the plural microphones into predetermined time sections; and
 - detecting the phase of the cross-spectrum between the sound signals in each section.
5. A method for detecting a delay time in signal input, comprising:
 - inputting sounds outputted from a sound source into plural microphones;
 - detecting a phase of a cross-spectrum between sound signals inputted

into the plural microphones;

detecting an inclination of the phase of the cross-spectrum with respect to the frequency due to respective distances from the sound source to the plural microphones; and

based on the inclination, detecting the delay time in sound reception from the sound source between the plural microphones.

6. The method for detecting a delay time in signal input as claimed in Claim 5, comprising:

dividing the frequency according to the band; and

based on inclinations of the phase of each band divided, detecting the delay time in the sound reception.

7. The method for detecting a delay time in signal input as claimed in Claim 6, comprising:

detecting the delay time in the sound reception when a tendency that the inclinations of each band concentrate on a specific inclination is strong.

8. The method for detecting a delay time in signal input as claimed in any one of Claims 5 through 7, comprising:

dividing the sound signals inputted into the plural microphones into predetermined time sections; and

detecting the phase of the cross-spectrum between the sound signals in each section.

9. A sound signal processor, comprising:

cross-spectrum phase detection means for detecting a phase of a cross-spectrum between sound signals inputted into plural microphones;

inclination detection means for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detection means with respect to the frequency; and

target sound detection means for detecting a target sound outputted from a detection target sound source and received by the plural

microphones based on the inclination with respect to the frequency detected by the inclination detection means.

10. The sound signal processor as claimed in Claim 9,

wherein the inclination detection means divides the frequency of the phase of the cross-spectrum according to the band and detects inclinations of each band divided; and

wherein the target sound detection means detects the target sound based on the inclinations of each band detected by the inclination detection means.

11. A sound signal processor for processing a sound outputted from a sound source and inputted into plural microphones, comprising:

cross-spectrum phase detection means for detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

inclination detection means for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detection means with respect to the frequency;

delay time detection means for detecting a delay time in sound reception from the sound source between the plural microphones based on the inclination with respect to the frequency detected by the inclination detection means; and

sound signal synthesizing means for synthesizing the sound signals inputted into the plural microphones based on the delay time detected by the delay time detection means.

12. The sound signal processor as claimed in Claim 11,

wherein the inclination detection means divides the phase of the cross-spectrum according to the band and detects inclinations of each band divided; and

wherein the delay time detection means detects the delay time in the sound reception based on the inclinations of each band detected by the inclination detection means.

13. A sound signal processor for processing a detection target sound outputted from a detection target sound source and inputted into plural microphones, comprising:

cross-spectrum phase detection means for detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

inclination detection means for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detection means with respect to the frequency;

delay time detection means for detecting a delay time in sound reception from the detection target sound source between the plural microphones based on the inclination with respect to the frequency detected by the inclination detection means;

sound signal synthesizing means for synthesizing the sound signals inputted into the plural microphones based on the delay time detected by the delay time detection means; and

target sound detection means for detecting the target sound in the synthesized sound signals synthesized by the sound signal synthesizing means based on the inclination with respect to the frequency detected by the inclination detection means.

14. The sound signal processor as claimed in Claim 13,

wherein the inclination detection means divides the phase of the cross-spectrum according to the band and detects inclinations of each band divided;

wherein the delay time detection means detects the delay time in the sound reception based on the inclinations of each band detected by the inclination detection means; and

wherein the target sound detection means detects the target sound based on the inclinations of each band detected by the inclination detection means.

15. A voice recognition device for processing a speech sound outputted from a speech sound source and inputted into plural microphones, comprising:

cross-spectrum phase detection means for detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

inclination detection means for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detection means with respect to the frequency;

speech sound detection means for detecting the speech sound received by the plural microphones based on the inclination with respect to the frequency detected by the inclination detection means; and

voice recognition processing means for performing voice recognition processing of the speech sound detected by the speech sound detection means.

16. The voice recognition device as claimed in Claim 15,

wherein the inclination detection means divides the frequency of the phase of the cross-spectrum according to the band and detects inclinations of each band divided; and

wherein the speech sound detection means detects the speech sound based on the inclinations of each band detected by the inclination detection means.

17. A voice recognition device for processing a speech sound outputted from a speech sound source and inputted into plural microphones, comprising:

cross-spectrum phase detection means for detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

inclination detection means for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detection means with respect to the frequency;

delay time detection means for detecting a delay time in sound reception from the speech sound source between the plural microphones based on the inclination with respect to the frequency detected by the inclination detection means;

sound signal synthesizing means for synthesizing the sound signals

inputted into the plural microphones based on the delay time detected by the delay time detection means;

speech sound detection means for detecting the speech sound in the synthesized sound signals synthesized by the sound signal synthesizing means based on the inclination with respect to the frequency detected by the inclination detection means; and

voice recognition processing means for performing voice recognition processing of the speech sound detected by the speech sound detection means.

18. The voice recognition device as claimed in Claim 17,

wherein the inclination detection means divides the phase of the cross-spectrum according to the band and detects inclinations of each band divided;

wherein the delay time detection means detects the delay time in the sound reception based on the inclinations of each band detected by the inclination detection means; and

wherein the speech sound detection means detects the speech sound based on the inclinations of each band detected by the inclination detection means.

19. A program for making a computer perform processing of detecting a target sound, the processing comprising:

inputting detection target sounds outputted from a detection target sound source into plural microphones;

detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

detecting an inclination of the phase of the cross-spectrum with respect to the frequency due to respective distances from the detection target sound source to the plural microphones; and

based on the inclination, detecting the target sound outputted from the detection target sound source and received by the plural microphones.

20. A program for making a computer perform processing of detecting

a delay time in sound reception, the processing comprising:

inputting sounds outputted from a sound source into plural microphones;

detecting a phase of a cross-spectrum between sound signals inputted into the plural microphones;

detecting an inclination of the phase of the cross-spectrum with respect to the frequency due to respective distances from the sound source to the plural microphones; and

based on the inclination, detecting the delay time in sound reception from the sound source between the plural microphones.